

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/011025

A. CLASSIFICATION OF SUBJECT MATTER  
Int.Cl<sup>7</sup> H01L21/3065

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
Int.Cl<sup>7</sup> H01L21/3065, H01L21/263, H01L21/205Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2004  
Kokai Jitsuyo Shinan Koho 1971-2004 Jitsuyo Shinan Toroku Koho 1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Sin IGARASHI et al., In-situ observation of surface blistering in silicon by deuterium and helium ion irradiation. Surface and Coatings Technology. September 2002, Vol.158 to 159, pages 421 to 425	1-11,14,15, 18,19
A	Koji NAKAYAMA and J.H. Weaver, Electron-Stimulated Modification of Si Surface. Physical Review Letters. February 1999, Vol.82, No.5, pages 980 to 983	1-11,14,15, 18,19
A	L.-J. Huang et al., Onset of blistering in hydrogen-implanted silicon. APPLIED PHYSICS LETTERS. February 1999, Vol.74, No.7, pages 982 to 984	1-11,14,15, 18,19

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	
"A"	document defining the general state of the art which is not considered to be of particular relevance
"E"	earlier application or patent but published on or after the international filing date
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed
"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search  
22 October, 2004 (22.10.04)Date of mailing of the international search report  
09 November, 2004 (09.11.04)Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Tetsuya NARUSHIMA, "Denshi Shosha ni yoru Silicon Hyomen Oryoku no Kanwa", Hyomen Kagaku, 10 September, 2001 (10.09.01), Vol.22, No.9, pages 614 to 619	1-11,14,15, 18,19
A	WO 01/011930 A2 (SILICON GENESIS CORP.), 15 February, 2001 (15.02.01), Full text & JP 2003-506883 A & US 2003-124815 A1	1-11,14,15, 18,19

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**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
  
  
2.  Claims Nos.: 12, 13, 16, 17  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:  
(See extra sheet.)
  
  
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
  
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

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**Continuation of Box No.II-2 of continuation of first sheet(2)**

The pattern of the atom species of the surface-structuring atoms stated in claim 12 is for specifying the invention by means of the brought result. However, since no specific example is given in the description, disclosure within the meaning of PCT Article 5 is lacked, and the invention is not supported by the disclosure of the description within the meaning of PCT Article 6.

The meaning that the pattern is one different in formation of a layer lower than surface stated in claim 13 is unclear. Therefore, this claim lacks the requirement of clarity within the meaning of PCT Article 6.

No specific example of the affinity pattern stated in claim 16 is given in the description. Therefore, disclosure within the meaning PCT article 5 is lacked, and the invention is not supported by the disclosure of the description within the meaning of PCT Article 6.

No specific example of the hydrophilic or hydrophobic pattern stated in claim 17 is given in the description. Therefore, disclosure within the meaning of PCT Article 5 is lacked, and the invention is not supported by the disclosure of the description within the meaning of PCT Article 6.

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